Serial No.: 09/891,580 Filed: June 26, 2001

Page : 2 of 9

Attorney Docket No.: 10417-085001 / F51-

134750M/TOM

In the claims:

Please amend the claims as follows:

1. (Currently Amended) A semiconductor device manufacturing method comprising: providing a substrate having a first formation area and a second formation area; forming an oxide film on the first and the second formation areas; forming an oxidation resistance film on the oxide film;

masking the second formation area by disposing a photoresist on the oxidation resistance film above the second formation area;

removing the oxidation resistant film above the first formation area;

removing the photoresist above the second formation area;

removing the oxide film above the first formation area while using the oxidation resistant film above the second formation area as a mask;

forming a first oxide film on the first formation area;

removing the oxide film on the second formation area and the oxidation resistance film above the second formation area without forming a photoresist; and

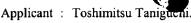
forming a second oxide film on the second formation area, wherein the first oxide film has thickness different from the second oxide film.

- 2. (Original) A semiconductor device manufacturing method according to claim 1, wherein the first oxide film serves as a gate oxide film of a first transistor, and the second oxide film serves as a gate oxide films of a second transistor.
- 3. (Original) A semiconductor device manufacturing method according to claim 2, wherein the first transistor is formed on the first oxide film, and the second transistor is formed on the second oxide film,

wherein the first oxide film is formed by performing thermal oxidization by using the oxidation resistant film as a mask,

wherein the second oxide film is formed by performing thermal oxidization.





: June 26, 2001

Serial No.: 09/891,580

Page : 3 of 9

Filed

Attorney & Docket No.: 10417-085001 / F51-134750M/TOM

4. (Currently Amended) A semiconductor device manufacturing method comprising:

forming an oxide film on a first transistor formation area and a second transistor formation area by performing thermal oxidization using the device separation film as a mask;

forming a device separation film on the semiconductor;

forming an oxidation resistant film across the entire surface of the semiconductor; removing the oxidation resistant film on the first transistor formation area by using a photoresist film as a mask;

removing the photoresist film;

removing the oxide film on the first transistor formation area by using the oxidation resistant film on the second transistor formation area as a mask;

forming a first oxide film by performing thermal oxidization by using the oxidation resistant film formed on the second transistor formation area as a mask;

removing the oxidation resistant film and the oxide film on the second transistor formation area without forming a photoresist;

forming a second oxide film on the second transistor formation area by performing thermal oxidization, wherein the first oxide film has thickness different from the second oxide film.

5. (Original) A semiconductor device manufacturing method according to claim 4, wherein a high-voltage MOS transistor is formed on the first gate oxide film thicker than the second gate oxide film,

wherein a normal-voltage MOS transistor is formed on the second gate oxide film.

- 6. (Original) A semiconductor device manufacturing method according to claim 4, wherein the surface of the semiconductor is not exposed when the photoresist film is used as a mask.
- 7. (Previously Amended) A semiconductor device manufacturing method according to claim 4, wherein forming a first transistor includes:

B)

Serial No.: 09/891,580 Filed: June 26, 2001

Page : 4 of 9

Attorney s Docket No.: 10417-085001 / F51-

134750M/TOM

forming a source/drain layer of a first conductive type having a low concentration by implanting ions of a first conductive impurity into the semiconductor of a second conductive type;

forming a source/drain layer of the first conductive type having a high concentration in the source/drain layer having the low concentration by implanting ions of the first conductive impurity into the semiconductor;

forming a semiconductor layer of the second conductive type that serves as a channel and is located between the source/drain layers of the first conductive type; and

forming a first gate electrode on the semiconductor through the first gate oxide film.

8. (Previously Amended) A semiconductor device manufacturing method according to claim 7,

wherein the source/drain layer having the low concentration is formed to contact at least the semiconductor layer that is formed below the first gate electrode.

9. (Previously Amended) A semiconductor device manufacturing method according to claim 7.

wherein the source/drain layer having the low concentration extends in a surface layer of the semiconductor to contact at least the semiconductor layer that is formed below the first gate electrode.

10. (Previously Amended) A semiconductor device manufacturing method according to claim 4 further comprising forming a first transistor after forming the first gate oxide film, including:

forming an opposite conductive source/drain layer having a low concentration by implanting ions of an opposite conductive impurity into the semiconductor of one conductive type;

forming an opposite conductive source/drain layer having a high concentration in the opposite conductive source/drain layer having the low concentration by implanting ions of the opposite conductive impurity into the semiconductor; and

BI

Serial No.: 09/891,580 Filed : June 26, 2001

Page : 5 of 9

Docket No.: 10417-085001 / F51-Attorney

134750M/TOM

forming a first gate electrode on the semiconductor through the first gate oxide film.

11. (Previously Amended) A semiconductor device manufacturing method comprising: forming a device separation film on the semiconductor;

forming an oxide film on a first transistor formation area and a second transistor formation area by performing thermal oxidization using the device separation film as a mask;

forming an oxidation resistant film across the entire surface of the semiconductor;

removing the oxidation resistant film on the first transistor formation area by using a photoresist film as a mask;

removing the photoresist film;

removing the oxide film on the first transistor formation area by using the oxidation resistant film on the second transistor formation area as a mask;

forming a first oxide film by performing thermal oxidization by using the oxidation resistant film formed on the second transistor formation area as a mask;

removing the oxidation resistant film and the oxide film on the second transistor formation area;

forming a second oxide film on the second transistor formation area by performing thermal oxidization, wherein the first oxide film has thickness different from the second oxide film; and further comprising:

forming the first transistor after forming the first gate oxide film, which includes forming first impurity layers having a low concentration by implanting ions of a first conductive impurity into two portions of the semiconductor of a second conductive type;

forming a second impurity layer having a low concentration by implanting ions of the first conductive impurity to connect the first impurity layers;

forming a third impurity layer having a high concentration by implanting ions of the first conductive impurity in the first impurity layer;

forming a fourth impurity layer by implanting ions of a second conductive impurity to divide the second impurity layer; and

Serial No.: 09/891,580 : June 26, 2001 Filed

Page : 6 of 9 Attorney s Docket No.: 10417-085001 / F51-

134750M/TOM

forming a first gate electrode on the semiconductor including the fourth impurity layer through the first gate oxide film.

12. (Original) A semiconductor manufacturing method according to claim 11, wherein the second impurity layer is thinner than the first impurity layer.